

**AMPHIBIANS AND REPTILES FROM ECUADOR, VENEZUELA, AND YUCATAN.**

BY HENRY W. FOWLER.

Several collections of herpetological specimens have recently been acquired by the Academy of Natural Sciences of Philadelphia. Important among them are those forming the basis of this paper. Several species, apparently new, are described and figured. All the figures are drawn to scale, the accompanying line signifying ten millimeters.

**ECUADOR.**

The collection from this country was made on the western slope of the Andes, from Guayaquil to Quito, during 1911, by Mr. Samuel N. Rhoads. The fishes were reported by the writer during the same year in these PROCEEDINGS. Since then all the collections Mr. Rhoads made were purchased by the Academy. In this connection I wish to express thanks to Mr. Rhoads for the appended notes relating to the habits of the various species.

**AMPHIBIA.****BUFONIDÆ.*****Bufo marinus*** (Linnæus).

Two from Bucay.

***Bufo typhonius*** (Linnæus).

Seven from Bucay. Found only under stones and logs, in woods and banana plantations.

This very variable species ranges over the greater part of South America, and in this connection I have examined many examples from the following localities: Chapada, near Cujaba in Matto Grosso (H. H. Smith); Upper Punes River (Steere); Bahia (Cope) in Brazil; Peru (Orton); Pebas (Orton), Ecuador; Surinam (Hering). Some examples show the light vertebral line very conspicuously, and in others it is wanting. Variation in the color of the back is seen from nearly uniform brownish specimens to those greatly blotched. Some large examples have nearly all the lower regions blackish, and they also show the postorbital flange greatly elevated. The Bucay specimens do not show any parietal ridges extending from the post-

orbital. Females from Pebas, with eggs, have scattered white spots on lower surface of body very pronounced, though the postorbital flange is hardly developed.

*Bufo caeruleocellatus* sp. nov. Pl. V, upper figure.

Body depressed, its width about equals that of head. No bony ridges on head, which is broadly depressed, though not constricted from rest of body. Snout a little depressed, contour as viewed above little less than right angle. Eye large, though somewhat less than snout in length. Mouth large, rictus extending slightly beyond eye. Lips thin, skin firm, and jaw edges trenchant. No teeth. Tongue large, free for great portion posteriorly, and hind edge triangular. Internal nares moderate. External nares well separated, so that each would fall in external fourth of antero-interorbital width. Latter depressed, or very slightly convex. Lores a little concave, smooth. Tympanum small, vertically ellipsoid, and vertical diameter about  $\frac{3}{8}$  horizontal length of eye. Parotids large, well separated from eyes, though each equals about  $1\frac{2}{3}$  eye lengths. Along upper side of head from snout tip low fold extends back, including upper eyelid externally and outer edge of parotid. Fold on latter well marked, though not extending on costal region.

Skin largely smooth, though upper surfaces of limbs and hind pelvic region above, with weak tubercles, a few of which are less developed on lower surfaces of hind limbs and costal regions. Parotids and eyebrows more or less granular. Lower surface of body otherwise smooth.

Limbs all rather slender. Fingers not webbed, second longest, and first and third subequally shortest. Finger tips all with rather well-developed tubercles. Toes webbed rather narrowly at bases, and each with somewhat well-developed distal tubercles. Two equal well-developed metatarsal tubercles. Fold of skin along outer tarsal edge.

Color in alcohol dark slaty-gray above, ground-color nearly uniform, marked with a number of scattered more or less rounded dusky to blackish blotches, each indistinctly edged with gray, or paler tint than general body-color, to form obscure ocelli. Upper surfaces of these limbs also marked with similar blotches, as three or four on each joint. Lower surface of body pale gray, evidently translucent in life. Breast and throat all more or less clouded with slaty specks, or obscurely spotted with paler or more whitish tints.

Length 23 mm.

Type, No. 18,069, A. N. S. P. Bucay, province of Guayas, western Ecuador. July, 1911. S. N. Rhoads.

Nos. 18,068, 18,070 and 18,064, paratypes, same data. Length 16 to 22 mm. All the specimens were found under stones, bark and leaves, in woods.

This species is apparently related to *Bufo cæruleostictus* Günther,<sup>1</sup> but differs in the color-markings. This is hardly due to age, as Günther gives the upper parts of the body as uniform brownish-black and the lower parts dirty gray-brown. Upper eyelids, sides of trunk and extremities all show small smooth bluish tubercles. His example was 3 inches 6 lines. Boulenger's figure<sup>2</sup> would show that Günther's toad cannot be identical.

*Bufo glaberrimus* Günther<sup>3</sup> differs in the smooth skin and a rose-colored spot in the groin, the general color being brownish-black.

*Bufo hæmatiticus* Cope<sup>4</sup> has a different coloration, especially a pale spot anterior and beneath the eye. A poor specimen in the collection from Coban (Cope) is not fit for comparison. Cope names var. *lachrymans*,<sup>5</sup> probably only a color form. Its length is 1 inch 6 lines.

The present species shows some variation in its color markings, and in some examples but few dark spots are present on the back. The latter is also variable as to roughness on its fore part above. (*Cærulea*, blue; *ocellus*, ring; with reference to the color markings on the back.)

*Bufo chanchanensis* sp. nov. Pl. V, lower figure.

Body moderately depressed, width about equal to that of head. Head without bony ridges, though broad and depressed, not constricted from rest of body. Snout a little depressed, contour as seen from above obtusely triangular, slightly more than right angle. Eye large, equal to snout in length. Mouth large, rictus extending trifle beyond eye. Lips thin, firm, and jaw edges trenchant. No teeth. Tongue large, free for last  $\frac{2}{3}$  at least, hind edge rounded. Internal nares large. External nares well separated, falling almost in outer fourth of antero-interorbital width. Interorbital depressed, very slightly concave, width little less than twice that of upper eyelid. Lores smooth. No tympanum. Parotids large, slightly separated from eyes, each equals twice length of eye. Along upper

<sup>1</sup> *Proc. Zool. Soc.*, London, 1859, p. 415. Western Ecuador.

<sup>2</sup> *Cat. Batr. Sal. Brit. Mus.*, 1882, p. 291, Pl. 21, fig. 1.

<sup>3</sup> *Proc. Zool. Soc.*, London, 1868, p. 483, Pl. 37, fig. 2. Bogota.

<sup>4</sup> *Proc. Acad. Nat. Sci. Phila.*, 1862, p. 158. Truando region, Colombia.

<sup>5</sup> *L. c.*

side of head from snout tip low fold extends back, including upper eyelid externally and outer edge of parotid, though not continued beyond.

Skin very rough, with more or less enlarged tubercles over upper surface. Lower surface of body finely granular. Upper eyelids with large tubercles, though parotids largely smooth. Upper surfaces of limbs tuberculate like back, and lower surfaces granulated like belly.

Limbs moderately slender. Third finger longest, first and second subequally shortest, and none webbed. Tips of fingers slightly dilated with tubercles. Toes with rather short webs, each ending in small tubercle. Two equal cuneate metatarsal tubercles. Fold of skin along outer tarsal edge.

Color in alcohol largely dusky. Sides and lower surfaces all more or less blackish, with abdomen laterally and posteriorly, together with lower surfaces of hind limbs, marbled or reticulated with paler spots or blotches in rather well-defined contrast. Side of upper jaw near edge and below eye, mottled a little, and after eye, along middle of side, blackish. Upper surfaces of limbs blotched with blackish, edged paler. Lower surfaces of all limbs with paler markings.

Length 32 mm.

Type, No. 18,181, A. N. S. P. Camp Chiguancay, in Chanchan River valley, western Ecuador. March, 1911. S. N. Rhoads.

Nos. 18,182, 18,185, 18,193, 18,195, 18,198, 18,202, 18,203, 18,205, paratypes, same data. Found in debris in woodland.

Related to *Bufo thaul* (Molina), as figured by Garnot and Lesson,<sup>6</sup> but that species is represented as having short rounded parotids and a very small distinct tympanum.

Variation in color is quite noticeable in the present species, though all the specimens are quite dark, with pale bands.

(Named for the Chanchan Valley.)

#### HYLIDÆ.

*Hyla rubra* Daudin.

Twelve from Hacienda Gorzon to the foot of Mt. Pichincha, on May 16.

Two from the forest above Chimbo, 10,300 to 12,500 feet elevation, on April 17.

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<sup>6</sup> *Voy. Coquille*, II, 1831, Pl. 7, fig. 6, Chili.



*Hyla chimbæ* sp. nov. Pl. VI, upper figure.

Body broad, well depressed. Head broad, depressed, its width about equals that of body, scarcely constricted. Snout rather broadly depressed, contour as viewed from above well convex. Eye moderate, about equals snout length. Mouth large, rictus not quite extending back opposite hind edge of eye. Lips rather thin. Maxillary teeth uniserial, fine, uniform, concealed by lip. Vomerine teeth in two series, each rather short, well behind, though would fall partly within space between internal nares, and series approximated posteriorly. Tongue oval, large, last fourth free, and hind edge rounded, not notched. Internal nares rather small. External nares well separated, so they fall near outer fourth of antero-interorbital width. Canthus rostralis not very distinct. Interorbital slightly concave. Tympanum rather small, vertically ovoid, and its length about  $\frac{4}{5}$  eye length.

Skin very finely granular or nearly smooth largely above, and entire lower surface more or less coarsely granular, though granules on belly largest.

Limbs all slender. Fingers with slight basal webs. First finger longer than second, dilated basally or with adnate pollex, third longest, and tips of all with well-developed rounded flattened disks, each much less than tympanum. Toes slender, fourth much longest, but moderately webbed basally or for less than half their extent, and distal disks similar to those of fingers. No rudimentary hallux or tarsal fold.

Color in alcohol evidently uniform dusky above, pale brownish in contrast below. Belly obscurely mottled with darker, and dark mottlings also along edges of hind limbs. Limbs above like back, below like general color of lower surface.

Length 37 mm.

Type, No. 18,137, A. N. S. P. Mountains above Chimbo, 10,000 to 10,800 feet, Ecuador. April, 1911. S. N. Rhoads.

Nos. 18,155 and 18,159, paratypes, same data. These 25 mm. in length.

This species is related to *Hyla rubra* Daudin, which differs in having the toes three-fourths webbed, snout  $1\frac{1}{2}$  to  $1\frac{3}{4}$  in length of eye, a strong fold across the chest, and in having the vomerine teeth in two small groups between the internal nares.

(Named for Chimbo, the type locality.)

*Hyla riobambæ* sp. nov. Pl. VI, lower figure.

Body broad, well depressed. Head broad, depressed, its width

greater than that of body, very slightly constricted. Snout broadly depressed, its contour as viewed above well convex. Eye moderate, about  $1\frac{1}{2}$  to snout tip. Mouth large, rictus extending back to hind eye edge. Lips as rather thin skin. Maxillary teeth uniserial, uniform, conic, hidden by lip. Vomerine teeth few, conic, slightly hooked, form nearly continuous series between internal nares, so that on level with posterior portion near edge of latter. Vomerine teeth would form very obtuse angle, latter directed posteriorly. Tongue large, orbicular, free for about last third, and hind edge well notched. Internal nares large. External nares rather close, so they fall slightly within median third of antero-interorbital width. Canthus rostralis distinct, not conspicuous. Interorbital slightly concave. Tympanum rather small, rounded, its length  $1\frac{1}{2}$  in eye. ~

Skin largely smooth above, granulate below, with granules on belly and lower sides much largest. Groin, hind part of pelvis and region around tympanum granulated. Lower surfaces of fore limbs and femora finely granulated.

Limbs all slender. Fingers with slight basal webs. First finger longer than second, dilated basally or with adnate pollex, third longest, and tips of all with well-developed rounded flat disks, each of which less than size of tympanum. Toes slender, fourth much longest, all rather well webbed basally or for half their extent, and distal disks similar to those of fingers. A rudimentary hallux in form of cuneate compressed tubercle at base of first toe on inside, though not free and much less in extent than that of first finger. A slight tarsal fold along inner edge.

Color in alcohol slaty above, with two broad more or less complete darker lengthwise bands. These bands extend from each eye above to hind side of pelvis, though broken a little posteriorly. Tympanum in a similar-colored blotch. Sides of body slightly more grayish in general color, with rather numerous rounded dark spots towards and in groin. Upper surfaces of limbs like back, with irregular darker blotches. All darker markings have slightly paler edges than body-color. Lower surface of body pale or nearly plain dull brownish. Hind surfaces of tibia and femora mottled dark slaty and whitish.

Length 48 mm.

Type, No. 16,161, A. N. S. P. Rio Bamba, Ecuador. April, 1911. S. N. Rhoads.

No. 16,160, paratype, same data. It shows belly speckled or spotted with dusky.

These specimens were found in crevices of a stone and cactus wall,

along the roadside. They were very quiet. Color in life a variegated grayish.

*Hyla labialis* Peters, from Bogota, is perhaps related, though it differs in the hardly distinct tympanum being only  $\frac{2}{3}$  of eye. It is also olive-green above, changing olive-green on sides with blackish-brown band from snout tip through eye to middle of side, lips narrowly edged brown, and sides of thighs narrowly reticulated with brown.

*Hyla nebulosa* Spix, from Brazil, *H. depressiceps* Boulenger, from Ecuador, and *H. phaeota* Cope, from Colombia, all differ in color as well as having the hind edge of the tongue rounded, not notched.

(Named for the town of Rio Bamba, the type locality.)

**Hyla quitæ** sp. nov. Pl. VII, upper figure.

Body moderately broad, somewhat depressed, and width apparently slightly less than that of head. Head broad, depressed, scarcely constricted. Snout depressed, contour as viewed above rounded or well convex. Eye moderate, about  $1\frac{1}{2}$  to snout tip. Mouth large, rictus extending back slightly beyond eye. Lips as rather thin skin. Maxillary teeth uniserial, uniform, pointed, conic, hidden by lip. Vomerine teeth few, larger in two very short series approximated between internal nares opposite their posterior portion. Contour of vomerine teeth would form very obtuse angle, latter directed posteriorly. Tongue rather large, ovoid, with bulge posterior, hind portion free about  $\frac{1}{4}$  entire length, and hind edge entire or convex. Internal nares moderately large. External nares moderately separated, falling about outer third in anterior interorbital width. Canthus rostralis not very distinct. Interorbital slightly depressed. Tympanum vertically ovoid, its vertical diameter about  $\frac{3}{4}$  length of eye.

Skin largely smooth above, granular below, though granules on belly best defined. Lower portions of flanks, hind limbs below and posteriorly, and sides of pelvis also more or less granular. Region around tympanum apparently smooth. Lower surfaces of fore limbs smooth.

Limbs all slender. Fingers with distinct, though small or short basal webs. First finger trifle longer than second, and swollen basally as if with rudimentary pollex. Third finger longest. Tubercles on fingers apparently little developed. All fingers and toes with rounded disks moderately developed, much smaller than tympanum. Toes slender, fourth much longest, about half webbed basally. First

toe with slight rudimentary dilation as hallux, basally. Metatarsal tubercles not evident. A slight posterior tarsal fold.

Color in alcohol more or less grayish above, slightly tinged with very pale greenish or slaty tint. Upper lip, snout tip, and throat, grayish-white. From behind eye, embracing tympanum and extending back to groin, broad black band, edged above and below with whitish or grayish. On lores this band continued as pale bluish-gray streak from eye towards tip of snout. From canthus rostralis, which defined by whitish line, a pale bluish-gray streak extends back, including upper eye cover, though separated by rather broad vertebral area to pelvis, near its hind end. These bluish bands edged dusky. Limbs with general color above like that of back, also with obscure dull slaty markings as blotches or otherwise, though below pale and uniform light brownish, likely translucent in life. Throat whitish, belly becoming tinged pale greenish-gray, slightly variegated with darker shades of grayish.

Length 20 mm.

Type, No. 18,238, A. N. S. P. Quito, Ecuador. June 4, 1911. S. N. Rhoads.

Nos. 18,234 and 18,235, paratypes, same data.

This species shows variation in color, as the blackish lateral streaks are sometimes broken up into spots or fade paler on groin, in which case if former occur they are whitish edged.

Related to *Hyla mesophaea* Hensel and *H. venulosa* (Laurenti), but differing in color.

(Named for Quito, the type locality.)

*Hyla quinquefasciata* sp. nov. Pl. VII, lower figure.

Body broad, well depressed. Head broad, depressed, its width a little less than that of body, and neck slightly constricted. Snout depressed, rather triangular as seen from above. Eye small,  $1\frac{1}{2}$  in snout or equal to space between front eye edge and external nares. Mouth large, extends back opposite hind eye edge. Lips thin. Maxillary teeth minute, uniform, concealed by lip. Vomerine teeth in two well-separated patches between posterior portions of internal nares, nearly horizontal or scarcely inclined posteriorly. Tongue broad, rounded, hind edge notched distinctly and this region free for last fourth. Internal nares moderate. External nares well separated, placed at third of antero-interorbital width. Canthus rostralis not very evident. Interorbital depressed, nearly level. Tympanum rounded,  $1\frac{1}{4}$  in eye.

Skin on back and upper surfaces of limbs smooth, with a few

scattered small tubercles on back. Lower surface of head, fore limbs and tarsus, tibia and fibula, smooth. Belly, lower sides and lower femoral regions rather coarsely granular. A fold of skin across chest.

Limbs all slender. Fingers not webbed. First finger a little shorter than second, little dilated basally. Third finger longest, and tips of all with broad flattened ellipsoid disks, each much less than tympanum. Toes moderate, fourth longest and all well webbed, nearly completely so, and distal disks similar to those of fingers. Two small metatarsal tubercles. Hind edge of tarsus with low fold.

Color in alcohol largely dull or pale brownish above, lighter or paler below, and of uniform tint. Back with five lengthwise darker streaks, median vertebral as triangle between eyes, and extends on front of upper eyelids. From posterior surfaces of latter each outer streak extends back, while outermost includes tympanum and runs well lateral along body. Upper surfaces of limbs with well-defined cross-bands, especially on femora and tibia. Hind surfaces of femora mottled slightly with dusky.

Length 30 mm.

Type, No. 18,115, A. N. S. P. Mountains above Chimbo, 10,000 to 10,800 feet elevation, Ecuador. April, 1911. S. N. Rhoads.

Only a single example, described above. It is related to *Hyla auraria* Peters from South America. The latter differs in the following points. Vomerine teeth within the limits of the internal nares, snout long as eye, tympanum vertically oval or two-thirds length of eye, three outer fingers webbed at base and back without five dark longitudinal streaks.

(*Quinque*, five; *fascia*, streak; with reference to the color of the back.)

**Nototrema marsupiatum** (Duméril and Bibron).

One example in poor preservation, taken in swamp-grass on a trip between Hacienda Gorzon to Mount Pichincha, May 11, 1911. In life color light green, breast and sides brassy-yellow, also spot back of eye, and joints of limbs bluish. Length 17 mm.

#### CYSTIGNATHIDÆ.

**Hylodes conspicillatus** Günther.

Twenty examples from Bucay, taken in July, 1911. They were found in a little spring-run which extended down into a grassy tract. In habits they suggested *Acris*, as they would jump into the water, swim across the brook, and come up again on the opposite side. The

largest is about 45 mm. long. Young examples show several whitish spots in a streak, due to the fold extending down from the lower edge of tympanum towards shoulder.

Three more examples with the same data differ from all the others in the median narrow whitish line extending from the snout tip to the vent. This line is clearly defined in all three. Many other of the specimens show a trace of it on the upper lip at the snout tip, but soon fading out in the darker color of the rest of the upper surface of the snout. These examples are thus strikingly like Boulenger's figure of *Hylodes unistrigatus*.<sup>7</sup>

Two other examples in the collection are likely identical. One was secured at Hacienda Jalancay near Chinchí, in Chimbo, April, 1911. The other is young, and was taken at the camp near the junction of the Chiguaneay and Chanchan Rivers.

*Hylodes pagmæ* sp. nov. Pl. VIII, upper figure.

Body moderately depressed, elongately ovoid in contour, and width a little less than that of head. Latter moderately broad, a little depressed, scarcely constricted. Snout slightly depressed, contour as viewed above rather triangular, tip obtuse. Eye rather large,  $1\frac{1}{2}$  in snout or equals space between front of eye and nostril. Mouth large, rictus falling about opposite hind edge of eye. Lips thin. Maxillary teeth fine, uniform, uniserial. Vomerine teeth in two large patches, approximated until directed posteriorly behind internal nares. Tongue apparently ovoid (distorted), last third free, hind edge rounded. Internal nares moderately large. External nares fall at third in antero-interorbital space as viewed in front. Canthus rostralis not very distinct. Interorbital depressed, twice width of upper eyelid. Tympanum trifle ovoid, its vertical diameter  $1\frac{1}{2}$  in eye.

Skin largely smooth. Belly, lower sides and lower surfaces of femoral regions granular, though granules apparently rather obsolete. Region around tympanum smooth. Lower surface of fore limbs and throat smooth. No fold across breast.

Limbs all slender. Fingers and toes without any webbing, and if ever present only slightly developed. First finger trifle longer than second, and slightly swollen basally on inside, as if with rudimentary pollex. Third finger longest. Tubercles on phalanges not well developed. All fingers and toes with terminal rounded disks, moderate in size or all much smaller than tympanum. Toes

<sup>7</sup> *Cat. Batr. Sal.*, 1882, p. 217, Pl. 14, fig. 4.

slender, fourth much longest. First toe with slight basal dilation. Metatarsal tubercles hardly developed.? Hind edge of tarsus with slight low fold.

Color in alcohol brownish above, slightly paler below, though latter region also clouded slightly with brownish. A dark band connects eyes anteriorly, and another extends from hind edge of each eye as W-shaped marking. Behind this several dark blotches on back, first with angle directed forward. Several dark blotches along each side of trunk. Femoral and tibial joints each with four transverse dark blotches. Feet and upper surfaces of fore limbs with dark blotches. All dark markings of upper surface with pale or grayish edges. A dark bar above each tympanum and another from front of eye to snout tip.

Length 32 mm.

Type, No. 18,244, A. N. S. P. Pagma Forest in the Chanchan River basin, province of Chimborazo, Ecuador. April, 1911. S. N. Rhoads.

Paratype, No. 18,179, A. N. S. P. From the camp at the Junction of the Chiguancay and Chanchan Rivers. This example differs only in details of coloration and such characters as may result from age. Length 21 mm.

*Hylodes achatinus* Boulenger,<sup>8</sup> based on a female 50 mm. long, is related. It is, however, described and figured with the tongue notched behind. Its color design is different, partially suggestive of the present species, as if unfinished.

*Hylodes surdus* Boulenger,<sup>9</sup> has no tympanic disk, nostrils nearly equally distant from eye and snout tip, and first finger shorter than second.

*Hylodes whymperi* Boulenger,<sup>10</sup> has the tympanum, first finger shorter than second, skin of back tubercular, and coloration different.

*Hylodes unistrigatus* Günther,<sup>11</sup> has the tympanum not quite half diameter of eye, and a strong fold across the chest.

*Hylodes buckleyi* Boulenger,<sup>12</sup> has the snout equal to the eye, tympanum a little over a third length of eye, toes free and slightly fringed, and skin above with smooth warts.

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<sup>8</sup> *Proc. Zool. Soc.*, London, 1898, p. 120, Pl. 15, figs. 2-2a. Cachabé.

<sup>9</sup> *Cat. Bat. Sal.*, 1882, p. 212, Pl. 14, fig. 3. W. Ecuador.

<sup>10</sup> *L. c.*, p. 218. Tortorillas and Cotocachi.

<sup>11</sup> *Proc. Zool. Soc.*, London, 1859, p. 416. W. Ecuador.

<sup>12</sup> *Cat. Bat. Sal.*, 1882, p. 217, Pl. 14, fig. 5. Intac.



*Hylodes longirostris* Boulenger,<sup>13</sup> differs in the long snout containing the eye-diameter about  $1\frac{3}{4}$  in its length, and the coloration.

(Named for Pagma Forest, where the type was secured.)

#### ENGYSTOMATIDÆ.

*Phrynisous lævis* Günther.

Twenty from the mountains above Chimbo, at an elevation of 10,000 to 10,800 feet, in April, 1911.

Nine from Hacienda Gorzon to foot of Mount Pichincha, on May 16, 1911.

One from Quito, on June 4, 1911. This and the above collected by S. N. Rhoads.

One obtained by Dr. M. Meitzner, from Huigra to Rio Chiguancay.

Mr. Rhoads says these frogs were found in the open pastures along the mountain side. They appeared to crawl or walk, and when one endeavored to grasp or try to catch them, they weakly tried to hop. The sexes were noticeably different, and the males were always much smaller. As this was the spawning season, they were usually found copulating. The males clasp the females very tightly, mount from above, and their grasp is axillary. Sometimes another male would grasp a male already in coitus. All found were in wet or damp places, extremely abundant, and appeared usually oblivious to danger. When handled they made a weak squeak. Variation in color was very great, and on the lower surface of the body varied from dark orange, brick-red to lighter or sometimes to a gamboge tint. Upper surface of body usually not variable, mostly olive-brown. None of the larger animals, as hawks, opossums, rats or foxes seemed to prey on them. Their only enemy appeared to be an ant thrush (*Grallaria monticola*), and it did feed on them.

#### DENDROBATIDÆ.

*Dendrobates trivittatus* (Spix).

One example 19 mm. in length, from the camp near junction of Chiguancay and Chanchan Rivers, taken in March, 1911. Color with snout brown, back black, and white line, includes edge of upper eyelid, to groin well contrasted. Lower surface uniformly whitish.

#### RANIDÆ.

*Phyllodromus pulchellus* Espada.

One example 15 mm. long from Bucay, in July, 1911.

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<sup>13</sup> *Proc. Zool. Soc.*, London, 1898, p. 120, Pl. 15, fig. 1. Cachabé.



***Phyllobates infraguttatus*** Boulenger.

Two examples from Huigra in Chimbo, at 4,000 feet elevation, on February 18, 1911.

Twelve examples from camp at junction of Chiguaneay and Chanchan Rivers in March, 1911.

Some of the above differ from Boulenger's figure in showing the white spots of the lower region much larger or with the intervening dark color quite narrow, producing a reticulated appearance. Some also have a more or less large dark blotch at each side of the sternum. Upper surfaces of hind legs in most all examples usually distinctly cross-banded with darker. Possibly a few slight tubercles or granules on the back may be due to preservation, or only variation. Most are perfectly smooth.

Six others, young with same data as last lot, show the belly and lower surfaces more or less whitish, though usually with two dark blotches on chest, one each side of median line.

Mr. Rhoads says the adults were found with the tadpoles hanging on their backs. These were apparently attached to the rugosities or slight tubercles on the back, the tadpole hanging by means of its mouth, with the appearance of holding on as if by a teat. The tadpoles were always found attached with their tails drooping backward, and six to ten were noticed on a single adult. In color the tadpoles were leaden-black. The adults were quite noisy.

***Prostherapis whymperi*** Boulenger.

One example 27 mm. long, on trip from Hacienda Gorzon to Mount Pichincha, May 10, 1911. Color above blackish, finely spotted with greenish-white and lateral stripe same color. Belly brassy-brown and head and throat spots indistinct. Found in a swamp.

***Hylaxalus huigrae*** sp. nov. Pl. VIII, lower figure.

Body depressed. Head moderate, depressed moderately. Snout moderately depressed, rather angular as viewed from above, well protruded beyond lower jaw. Eye large, about  $1\frac{1}{2}$  in snout or equal to space between front eye edge and nostril. Mouth large, rictus extending back about opposite hind eye edge. Maxillary teeth minute, mostly uniserial, each tooth simple, short and conic, and mostly hidden by thin lip. Vomerine teeth absent. Tongue large, ellipsoid, hind edge deeply emarginate, though rather evenly concave, and hind third free. Internal nares moderate. External nares small, mark inner third of antero-interorbital width. Canthus rostralis scarcely distinct, and lores oblique. Interorbital flat. Tympanum small, rounded, about one-third in eye length.

Skin perfectly smooth above and on sides of both trunk and limbs. Lower surface of body, including breast, belly, and lower femoral region, weakly granular, though granules all rather large in size. Lower surfaces of fore limbs and throat, smooth.

Limbs rather slender. Fingers and toes entirely free, without any webs whatever. First finger a little shorter than second, dilated basally with moderate tubercle or pollex, third longest, and tips of all broadly dilated so that front edges wide, or greater than diameter of tympanum. Toes slender, fourth much longest, and distal disks or dilations similar to those on fingers. A well-developed tubercle at base of first toe on sole of foot inside, and of about equal extent to that of first finger. Tarsal fold very indistinct.

Color in alcohol largely dull or gray-brown above, much paler below. Back scarcely variegated. A dark broad band connects eyes across interorbital for its posterior extent and beyond till opposite hind edge of tympani. Limbs above with indistinct darker cross-bars or blotches. Groin not variegated, and breast and belly likewise.

Length 20 mm.

Type, No. 18,113, A. N. S. P. Huigra, at an elevation about 4,000 feet, Ecuador. February 13, 1911. S. N. Rhoads.

Related to *Hyloxalus bocagei* Espada,<sup>14</sup> which differs in having the skin quite smooth, canthus rostralis angular, loreal region nearly vertical, tympanum half width of eye, toes nearly entirely webbed, and coloration.

(Named for Huigra, the type locality.)

*Rana brevipalmata rhoadsi* subsp. nov. Pl. IX, upper figure.

Body moderately depressed. Head moderately depressed, wider than rest of body. Snout moderately depressed, somewhat pointed as viewed from above, well protruded beyond lower jaw. Eye large, about equals snout in length. Mouth large, rictus extends back opposite front edge of tympanum. Maxillary teeth short, conic, strong, uniserial, and hidden by lip. Vomerine teeth weak, small, in two rounded patches between and partly behind internal nares. Tongue large, sagittate or elongately triangular with deep notch behind, and posteriorly free for a third its length. Internal nares well separated, moderate in size. External nares small, widely separated, further apart than interorbital width. Canthus rostralis little developed, and lores oblique. Interorbital depressed, though

<sup>14</sup> Boulenger, *Cat. Batr. Sal.*, 1882, p. 138. Sarayacu and Canelos.

slightly convex. Tympanum moderate, rounded, about  $\frac{2}{3}$  orbital length.

Skin largely smooth above, and perfectly so on sides of both trunk and limbs as well as entire lower portions. On back, between eyes and vent, a number of minute obsolete wide-set granulations.

Limbs slender. Fingers free and toes all completely webbed. First finger longer than second, subequal with third, with large tubercle or pollex basally inside. Tubercles on fingers and toes not very conspicuous. Toes slender, and fourth much longest. Cuneate tubercle at base of first toe well developed, though much smaller than that of first finger. Tarsal fold very pronounced along inner edge of tarsus.

Color in alcohol with back and upper surface of head deep olive-brown, marked obscurely with some rather wide-set, ill-defined dusky spots. Lips and tympanum brown, and throat much paler or lighter, also uniform. Fore limbs brownish, paler below, and upper surfaces with obscure dusky marks as streaks or blotches. From elbow to palm, posteriorly, dark streak well defined. Hind limbs brownish above, pale below, and both surfaces mottled with rather coarse dark reticulations, most distinct or blackish along hind femoral regions. Feet also variegated with dusky. Sides of trunk with pale olive tint, with a few obscure dusky spots. Belly pale like throat.

Length 43 mm.

Type, No. 18,051, A. N. S. P. Bucay, Province of Guayas, Western Ecuador. July, 1911. S. N. Rhoads.

Nos. 18,073, 18,080, and 18,082 to 18,084, paratypes, same data.

This subspecies is closely related to *Ranula brevipalmata* Cope,<sup>15</sup> figured for comparison as Plate VIII, lower figure, but differs in several characters, such as the smaller tympanum and much shorter snout. It agrees, however, in the coloration, especially in not having the limbs transversely barred with darker above. For comparison I have had Cope's type.

According to Mr. Rhoads, it lives about springs, and recalls the habits of our spring frog (*Rana clamata*).

A tadpole, with the same data as the examples from Bucay, is likely identical.

(Named for Mr. S. N. Rhoads.)

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<sup>15</sup> *Proc. Acad. Nat. Sci. Phila.*, 1874, p. 131. Nauta.

## REPTILIA.

## COLUBRIDÆ.

## COLUBRINÆ.

*Drymobius boddaertii* (Santzen).

Two from between Huigra to Rio Chiguancay, in 1909-1911, collected by Dr. Max Meitzner.

*Drymobius dendrophis* (Schlegel).

One, with same data as last.

*Erpetodryas fuscus* (Linnaeus).

A large example from the Rio Chiguancay, taken by Mr. Rhoads in March, 1911. It runs swiftly along the ground.

Another, smaller, was taken near Bucay in July, 1911. It was found in bushes, several feet above the ground.

*Leptophis occidentalis* (Günther).

One from between Huigra to Rio Chiguancay, in 1909-1911, collected by Dr. Meitzner.

*Liophis albiventris* (Jan).

One with same data as last, and another from Quito, taken by Mr. Rhoads on June 4, 1911.

*Urotheca lateristriga* (Berthold).

One from between Huigra to Rio Chiguancay, 1909-1911, taken by Dr. Meitzner.

*Lampropeltis micropholis* Cope.

Eight examples, and one head, with same data as last. Mr. Rhoads secured an example from Huigra, at 4,200 feet elevation, on February 17, 1911. Another was also secured by him at Hacienda Jalancay, Chinchí, in the Province of Chimborazo, in April, 1911.

*Atractus badius* (Boie).

One from Huigra, at 4,500 feet elevation, found under the ground on February 18, 1911, by Mr. Rhoads. Dr. Meitzner also secured the larger example from between Huigra to Rio Chiguancay, in 1909-1911.

## HOMALOPSINÆ.

*Leptodeira albofusca* (Lacépède).

One from the lowlands near Duran, taken near the edge of a forest, February 12, 1911.

## ELAPINÆ.

*Elaps fraseri* Boulenger.

Two from between Huigra to Rio Chiguancay, secured between 1909-1911 by Dr. Meitzner.

**AMBLYCEPHALIDÆ.**

**Leptognathus ellipsifera** Boulenger.

One, same data as last.

**Leptognathus andianus** Boulenger.

Two, also same data as preceding.

**CROTALIDÆ.**

**Lachesis schlegelii** (Berthold).

One, same data as preceding.

**Lachesis microphthalmus** Cope.

Two examples, and one head. These from Dr. Meitzner, and with same data as last.

**GECKONIDÆ.**

**Gonatodes caudiscutatus** (Günther).

Two, secured in July, 1911, by Mr. Rhoads, at Bucay. They were found living in crevices of porches of the second story of houses. They were seen to come out on the screen, about a foot or so from their retreat. Their movements were slow and sluggish, and they darted suddenly, for a short distance only.

**IGUANIDÆ.**

**Anolis gemmosus** O'Shaughnessy.

Two from Bucay, in July, 1911, secured by Mr. Rhoads.

**Basiliscus galeritus** A. Duméril.

Mr. Rhoads secured two from the camp at the junction of the Rio Chiguancay and Rio Chanchan in March, 1911, and three more at Bucay in July, 1911.

According to Mr. Rhoads, it is a most interesting species. It was found frequenting the banks of running streams, where they would sit on the rocks in the open sunshine. These rocks were always near the edge of the water. When disturbed, the lizards would suddenly dart across the intervening running water to the next rock or boulder, and then turn their heads around and look at the intruder in a most apish fashion. In crossing the surface of the water their feet and tails would move so rapidly that no portion of the animal appeared submerged. Often the fore part of the body was raised an inch or more above the surface. Frequently the lizards would cross very turbulent water. When chased from rock to rock, they would finally attempt to cross even wide torrents, and are able by the great speed of their movements to go as far as thirty or forty feet

before becoming exhausted. They would then sink below the surface, and if watched carefully they may have been found to rise again farther down stream to swim towards the bank, though Mr. Rhoads had not seen them reach it under these difficulties.

Another variety, green and blue in color, was found up to 3,500 feet elevation, at least to Chanchan. It lives about the streams on the edges of forests. When the sun appears these lizards would keep along the edges of the water. One was seen to cross a small stream near Bucay.

*Liocephalus iridescens* Günther.

One from between Huigra to Rio Chiguancay, 1909-1911, secured by Dr. Meitzner.

*Liocephalus guntheri* Boulenger.

Mr. Rhoads secured eight at Rio Bamba in April, 1911, and one on a trip from Hacienda Gorzon to the foot of Mount Pichincha, on May 11, 1911, at an elevation of 10,500 feet. Of the Bucay examples, one was young and shows two lateral white lines, the first from the hind eye-edge and second from below ear.

#### TEIIDÆ.

*Ameiva septemlineata* A. Duméril.

One from camp at junction of Rio Chiguancay and Rio Chanchan in March, 1911, two from Huigra in April, and six from Bucay in July. All obtained by Mr. Rhoads. Some examples vary in having an outer or fourth row of ventral plates, sometimes rudimentary or again better developed. Most larger examples show no median streak down the back, and present in only one case.

*Proctoporus unicolor* (Gray).

One from Hacienda Gorzon to the foot of Mount Pichincha on May 16, 1911. Taken by Mr. Rhoads.

#### VENEZUELA.

The Amphibians and Reptiles from Venezuela form part of the collections of natural history objects brought together by Mr. Francis E. Bond. Like the fishes, which I have previously reported, they were all secured in the Orinoco delta region during the late winter and early spring of 1911. Mr. Bond has kindly given the collection to the museum of the Academy.

#### HYLIDÆ.

*Hyla maxima* (Laurenti).

One from near the mouth of the Manamo, found on a palm leaf.

Another from the Manamo near Boca Uracoa. Mr. Brown says they were very abundant and vociferous, doubtless due to the heavy rains then prevailing. Both examples adult.

#### COLUBRIDÆ.

##### COLUBRINÆ.

*Helicops angulatus* (Linnaeus).

Two young, and several eggs containing similar specimens, from Cariquito.

*Drymobius boddærtii* (Santzen).

Two from Cariquito.

*Phrynonax fasciatus* (Peters).

One from Cariquito.

*Spilotes pullatus*.

Three large examples, all from Cariquito.

*Coluber corais* Boie.

Two adults from Cariquito.

*Erpetodryas sexcarinatus* (Wagler).

One obtained at Cariquito.

*Rhadinæa cobella* (Linnaeus).

One from the Juanipa River.

##### HOMALOPSINÆ.

*Oxybelis fulgidus* (Daudin).

One large example from Cariquito. It contained a lizard about a foot in length.

*Oxybelis acuminatus* (Wied).

Two from Cariquito.

##### BOIIDÆ.

*Corallus cookii* Gray.

Two from Cariquito.

##### IGUANIDÆ.

*Anolis nitens bondi* subsp. nov. Plate 10.

Body long, nearly cylindrical, and no dorso-nuchal fold. Tail compressed, without crest. Head and trunk about two in tail. Head depressed, longer than tibia. Snout depressed, tip rather broadly convex. Eye lateral, elongate, much nearer ear than snout tip. Eyelids minutely scaly, movable. Teeth moderately large, and becoming larger posteriorly or below eyes. Teeth in front of

each jaw small. A small gular appendage, though no transverse fold across throat. Interorbital space very narrow and concave. Ear much smaller than eye, rounded.

Upper head scales large, smooth, and in three or four series on bony interorbital. Occipital scale rounded, much larger than ear. Scales on back small or minute, subhexagonal, juxtaposed, smooth, and about four vertebral series distinctly more or less uniformly larger. Ventral scales rhomboidal, much larger than dorsal, and each one with a distinct lengthwise keel. Upper scales on limbs all rhomboid and more or less keeled, lower scales minute and like those on back. Scales on tail all rather larger than those on back, similar to those comprising vertebral series.

Limbs slender, and long toe slender, with distal joints raised above penultimate and mostly slightly swollen. Adpressed hind limb not quite reaching forward to snout tip.

Color in alcohol mostly pale or dull greenish-gray, with metallic lustre, and lower surface of head and trunk more or less whitish. Latter regions, besides lower surface of tail, with scattered dusky dots, rather inconspicuously distributed.

Total length 95 mm.

Type, No. 18,277, A. N. S. P. Cariquito, Venezuela. March, 1911. Francis E. Bond and Stewardson Brown.

Only known from the above example. It is possibly only a form of *Anolis nitens* (Wagler), though, according to Boulenger's account, that species<sup>16</sup> would differ in having the head shorter than the tibia the upper head scales keeled, the enlarged dorsal vertebral scales in only two series, the adpressed hind limb reaching beyond the snout tip, the digits very feebly dilated, the rounded tail more than twice length of head and body, and the coloration.

(Named for Mr. Francis E. Bond, who organized the Venezuela Expedition of 1911.)

*Polychrus marmoratus* (Linnaeus).

Four from Cariquito.

*Tropidurus torquatus* (Wied).

Two from Cariquito.

*Plioa plica* (Linnaeus).

Four from Cariquito.

*Iguana tuberculata* Laurenti.

Three examples from Corical.

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<sup>16</sup> *Cat. Lizards Brit. Mus.*, Ed. 2, II, 1885, p. 91.



## TEIIDÆ.

*Tupinambis teguexin* (Linnaeus).

Two from Cariquito.

*Tupinambis nigropunctatus* (Spix).

Two examples from Cariquito.

*Ameiva ameiva* (Linnaeus).

One from the Juanipa River and two from Cariquito.

*Cnemidophorus lemniscatus* (Daudin).

Four males and two females from Cariquito.

## SCINCIDÆ.

*Mabuya agilis* (Raddi).

One from Cariquito.

## CROCODILIDÆ.

*Jacaretinga sclerops* (Schneider).

One from Corical.

*Jacaretinga* Spix has page priority over *Caiman* Spix.

## TESTUDINIDÆ.

*Testudo denticulata* Linnaeus.

A large shell from the Juanipa River, also two small specimens with same data.

## YUCATAN.

A small collection from the Chichen-itza Ruins, in the northeastern part of this country, was made by Mr. Edward H. Thompson. It becomes the property of the Academy through Dr. Ward Brinton.

## ENGYSTOMATIDÆ.

*Rhinophrynus dorsalis* Duméril and Bibron.

## COLUBRIDÆ.

*Coluber corais* Linnaeus.

*Oxybelis acuminatus* (Wied).

*Leptodeira personata* Cope.

*Himantodes gemmistriatus* Cope.

*Elaps fulvius* Linnaeus.

## GLAUCONIDÆ.

*Glauconia albifrons* (Wagler).

## IGUANIDÆ.

*Ctenosaura acanthura* (Shaw).

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#### EXPLANATION OF PLATES V-X.

PLATE V.—Upper figure, *Bufo caruleocellatus* sp. nov.

Lower figure, *Bufo chanchanensis* sp. nov.

PLATE VI.—Upper figure, *Hyla chimba* sp. nov.

Lower figure, *Hyla riobambæ* sp. nov.

PLATE VII.—Upper figure, *Hyla quitæ* sp. nov.

Lower figure, *Hyla quinquefasciata* sp. nov.

PLATE VIII.—Upper figure, *Hylodes pagmæ* sp. nov.

Lower figure, *Hyloxalus huigra* sp. nov.

PLATE IX.—Upper figure, *Rana brevipalmata rhoadsi* subsp. nov.

Lower figure, *Rana brevipalmata* Cope.

PLATE X.—*Anolis nitens bondi* subsp. nov.